

Cover Letter

June 24 ,2003

Henry Rohrig Truck Alignment System

To whom it may concern;

I hope this application for Utility Patent will be accepted for I have spent alot of time working on this to make it better than the others. I have had my own truck and know the problems you have with tire wear and the cost of repair. I am now retired and could not afford to pay eight to ten thousand dollars that the attorneys are charging for a patent.

If you need more information or drawings - pictures please contact me. I can follow up with more if I know what needs to be covered.

My home address is; 5532 Fulcher Ave. N. Hollywood, CA. 91601, but I receive my mail through my P.O. Box. 2159, Toluca Lake, 91610. I do not always receive my mail at home, my phone # 818-761-3628 and cell phone # 818-489-2049.

Thanking you in advance.


Henry Rohrig

Henry Rohrig Truck Alignment System 818-761-3628 818-489-2049

For: 22.5 / 24.5 wheel size truck-buses and trailers.

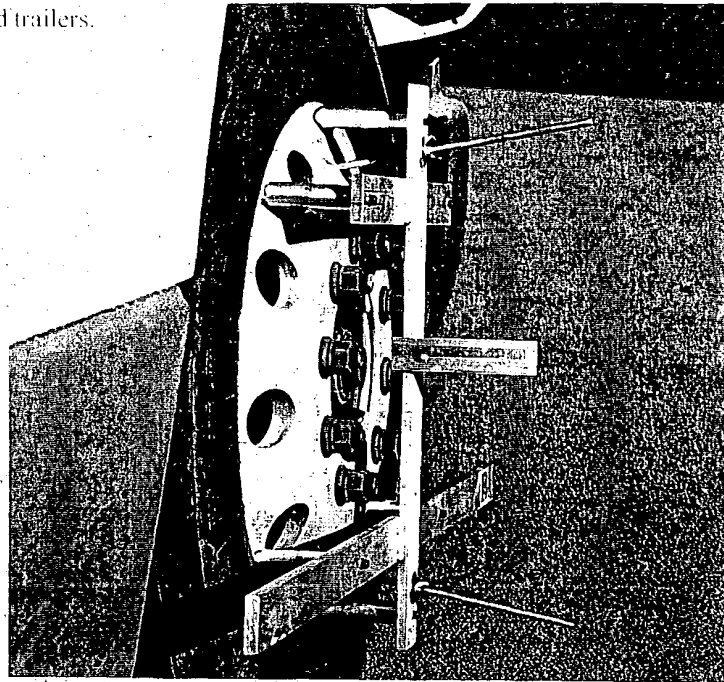
P.O. Box 2159 Toluca Lake, Ca. 91610

Application: #

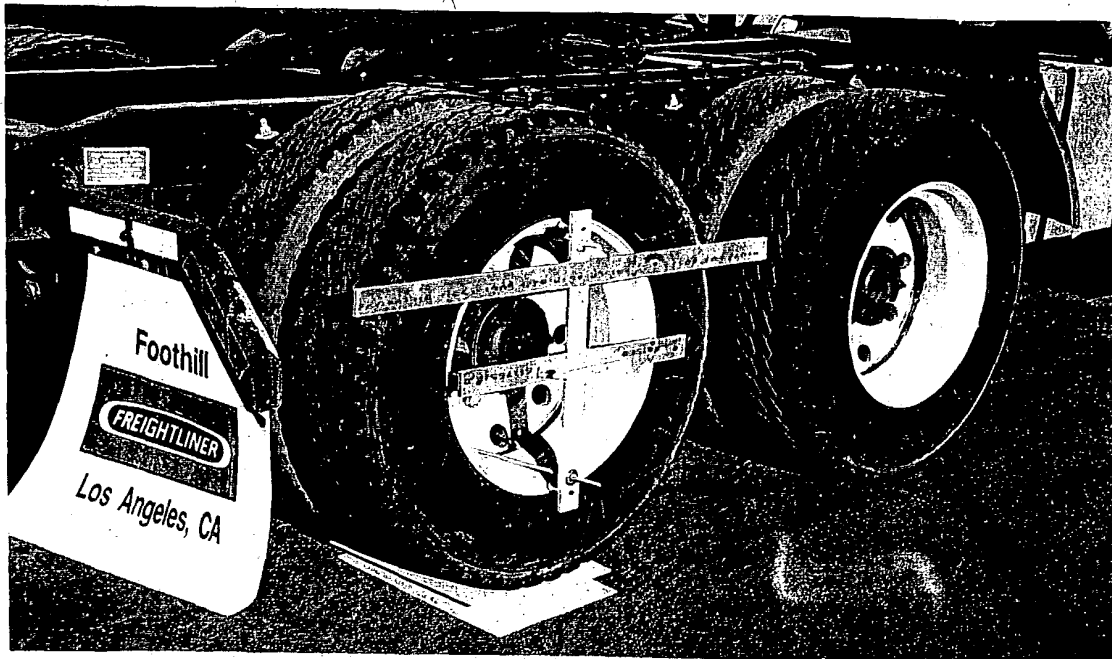
Confirmation: #

Patent: #

Filing date: #



Picture # 13



Picture # 7

Henry Rohrig Trruck Alignment System for 22.5 / 24.5 wheel size also trucks-buses and trailers.

U.S. Citizen P.O. Box 2159 Toluca Lake , Ca. 91610 / 818-761-3628 818-489-2049

Cross-reference to related applications

Not Applicable

Statment regardine federally sponsored research or development

Not Applicable

Reference to sequence listing, a table, or a computer program listing compact disc appendix

Not Applicable

Background of the invention

This invention is for the alignment of Class A Trucks - Trailers and Buses. It is standard procedure in the industry to align the steering axle and the drive axles. This should be accomplished periodically depending on the condition of the roads. Most of the roads are in such a condition that it is required to do this alignment two times a year. If you drive the truck or bus with it being out of alignment you will ware the tires exccessively, and it is more difficult to steer and to control - which is a safety factor to consider. Some of the units previously and currently being used - use the tires as the basis of the alignment. Even if tires are inflated equally, the profile will not be exactly the same. Therefore, when you use the tires as a reference point you will not get an accurate reading as using the wheels.



.FIG. 1 Another Alignment unit
This picture depicts what we were saying about tire side wall alignment

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There are some systems that use the wheel, which is 100% better than other methods of measurement. If you use the tires as a point of reference either from the side wall [which has embossed lettering] or the tread [which has uneven ware pattern] you will have an inaccurate alignment reading.

Brief summary of the invention

This system uses the wheel as point of reference. Attaching the tooling to the wheel and projecting the position of the rear wheel onto the steering wheel tooling. This system uses a roller plate to set the wheels on when adjusting so it will move without restriction. This system aligns Class A trucks - buses and also has a unit that is used to align the trailer axles. There are also tooling jigs to calibrate the units.

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Detailed description of the invention

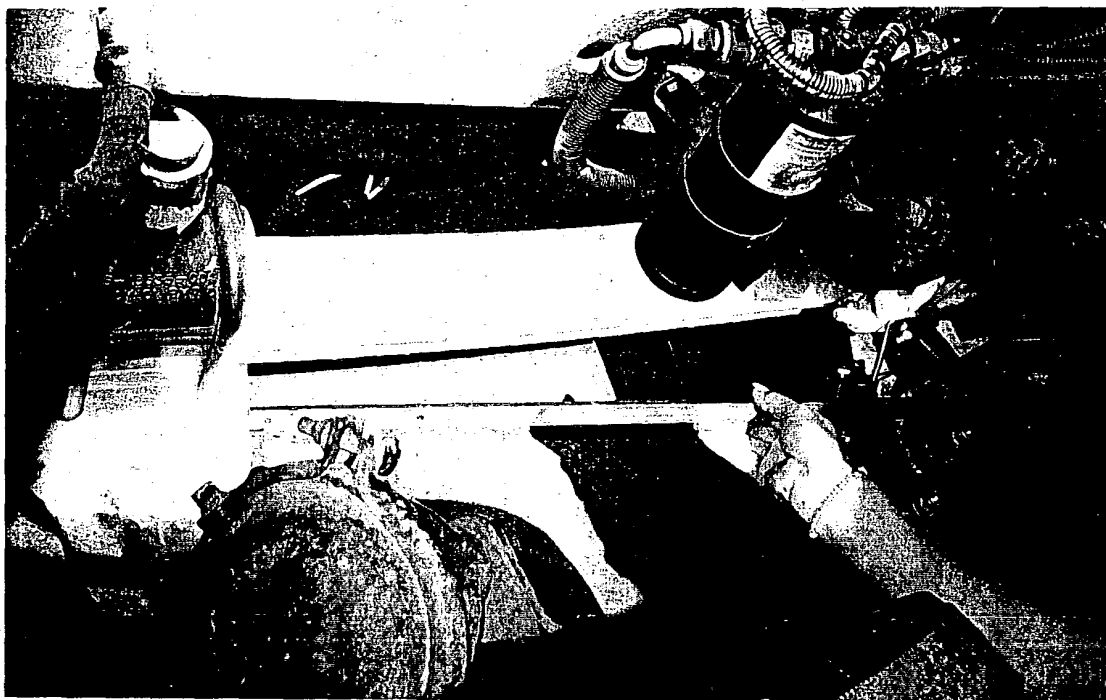
When you find any of the following items out of manufactures specifications - due to ware - poor workmanship previously - broken or damaged in any way these items must be corrected at that time before continuing to next step in the alignment. Starting the alignment with the vehicle on a level surface, then raising the hood [to have a full visual view of the front,back and top of the tire and wheels]. At this point use the trammel point with the 24" bar -placing one end of the trammel bar on the front of the axle and adjusting the trammel point so it would be touching the spring bushing at the bracket. You then go to the other side of the truck - and do the same thing at the same point. You are checking to establish that the axle reference is true to the direction of the truck. If this is not correct you must correct before continuing see Picture 2 page# 7. Using the level on the top of the rail over the spring and noted the degree Picture 3 page# 7 ,then place the level on the top surface of the axle Picture 4 page# 8. Then compare the two angles and see if the degree angle is within the manufactures specifications for the caster setting for that axle. Most of the caster settings on the class A trucks will be between 3 and 4 degree positive angle. If it is not correct you will have to decrease or increase the shims between axle and springs to achieve the proper angle, if correct. At this point jack the steering axle and rotate the wheel checking the bearings for there condition and tightness. Now you check the wheel movement top to bottom making sure the king pins are not worn. Now you move the wheel from side to side checking to see if you have any movement in the tie rod ends or drag link. You do the same thing on the other side. When everything checks out you lower the wheels onto the roller plates Picture# 5 page# 8. The roller plates allow the wheels and axle to move freely with the weight of the truck. Then take the steering axle alignment units and attach them to both wheels Picture# 13 page#1. The bottom and lower front pins are fixed to locate unit - use the two threaded rods to hold the unit to the wheel. Then rotate the other four pins to rest in wheel radius and tighten allen bolts. Then use the toe-in trammel point bar setting from the front dimension using the index point on the top edge of the bottom bar Picture# 6 page # 9 Then move this to the back of the wheel and using the index point that is preset for 1/16" that setting will give you the proper toe-in when adjusted. Rejack steering axle and remove roller plates.

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Drive Axle - jack the rear drive axle - rotating the wheel and checking bearings for condition and tightness. You will also check the brake drums making sure they are not rubbing or the brakes are not out of adjustment. Now check if there is wheel movement top to bottom or side to side. If so you must replace bearings or recalibrate. When everything checks out you lower the wheels onto the roller plates. Next you install the drive axle alignment units and attach them to both wheels Picture.# 7 page 1. The bottom and lower front pins are fixed to locate unit use the two threaded rods to hold the unit to the wheel, then rotate the other four pins to rest in wheel radius and tighten allen bolts in both units. Next using the 36" trammel point bar and the adjustable trammel only - place the one end of the bar to the out side of the rail and the trammel point on the index point on top of the top member of the tooling rear section locking it and checking the same place on the other side Picture# 8 page #9. If this is not the same you must add or remove shims from the transverse rod to frame bracket to center axle on rails. Next turn laser light on both sides and light will be projected on the scale in the center of the steering axle tooling, if it is not the same number on both scales the drive axle will be adjusted to align up correctly. After this rejack and remove roller plates. If you have two drive axles then proceed to forward drive axle and complete in same manner.

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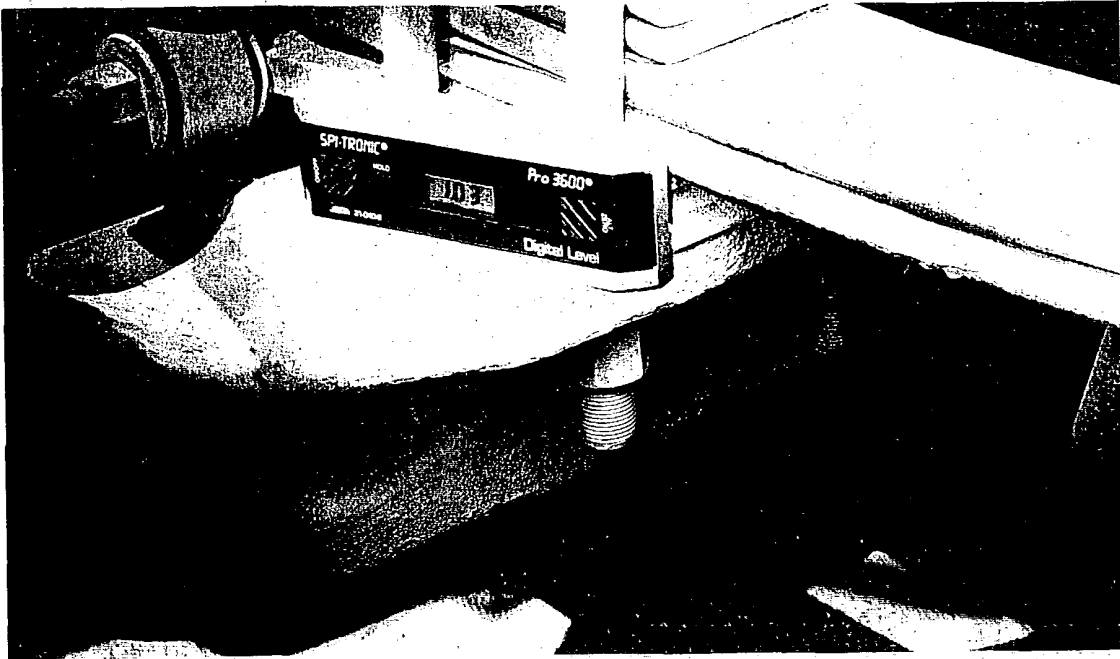
Trailer alignment - starting the alignment with the unit on a level surface. Installing the alignment tooling on the king pin and adjusting down the outer legs Picture.# 9 sheet # 6 of the drawings or bottom of this page. Jack the rear axle - rotate the wheel and checking the bearing for there condition and tightness. You will also check the brake drums making sure they are not rubbing and the brakes are not out of adjustment. Now check if there is any wheel movement top to bottom or side to side. If so you must replace the bearing or recalibrate. When everything checks out you lower the wheels onto the roller plates. Next you install the same unit used for the drive axle alignment and attach them to both wheels, the bottom and lower front pins are fixed to locate unit, use the two threaded rods to hold the unit to the wheel, then rotate the other four pins to rest in wheel radius and tighten allen bolts in each unit. Next turn laser light on both sides and light will be projected on the two scales located on the king pin tooling. If it is not the same number on both scales the axle will be adjusted to align up correctly. After this rejack and remove roller plates. If you have two axles then proceed to forward axle and complete in the same manner.



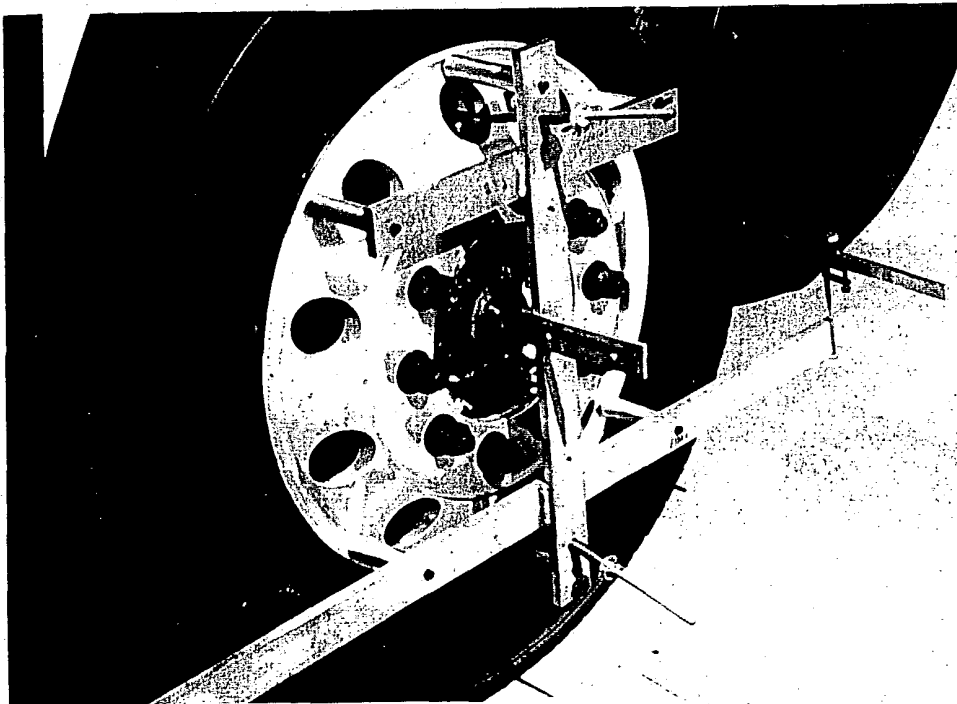
Picture #2 SPRING BUSHING TO AXLE



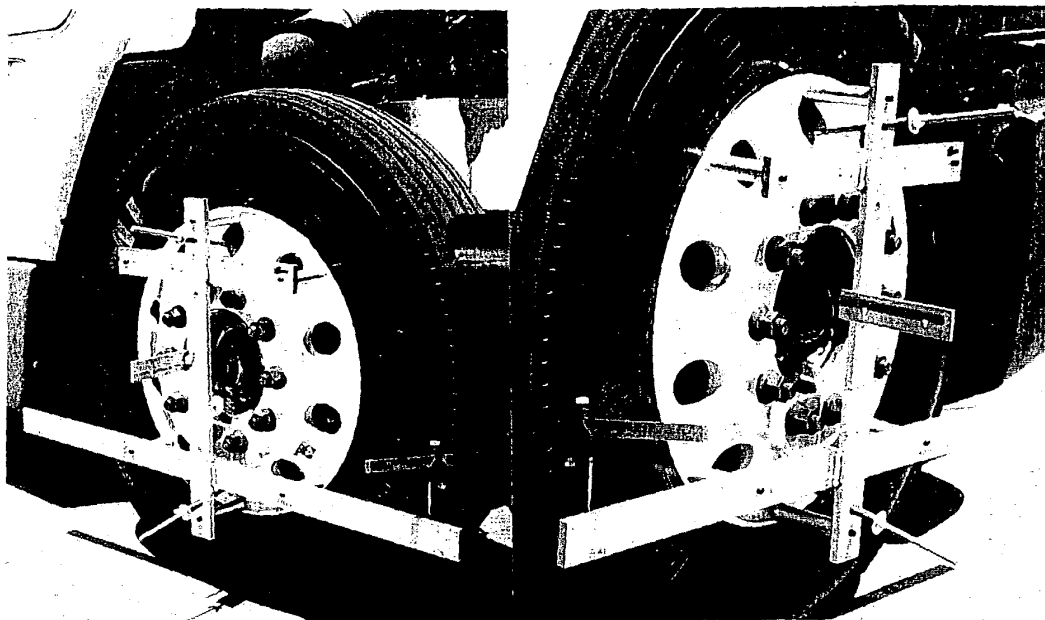
Picture #3 CHECKING ANGLE ON FRAME RAIL



Picture #4 CHECKING ANGLE ON AXLE

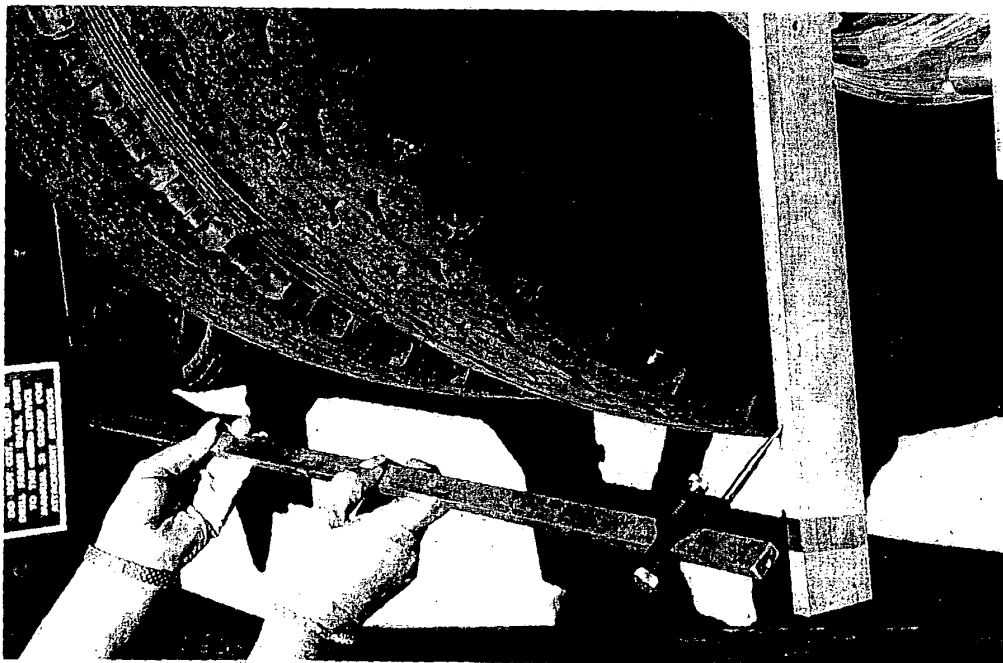


Picture # 5 STEERING AXLE ON ROLLER PLATES WITH ALIGNMENT UNIT



Picture # 6 TOE - IN VIEW
IN FRONT OF WHEELS

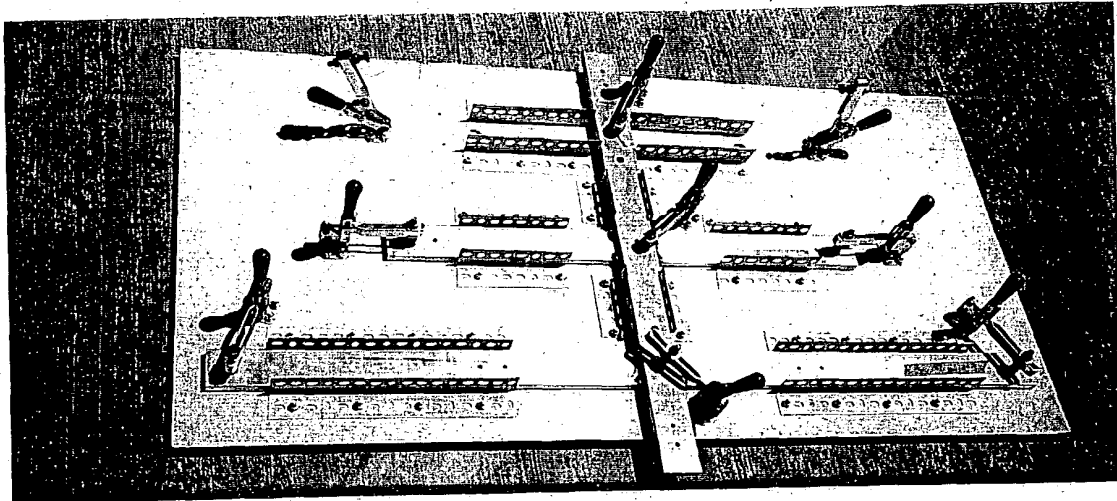
Picture # 14 TOE-IN VIEW
IN BACK OF WHEELS



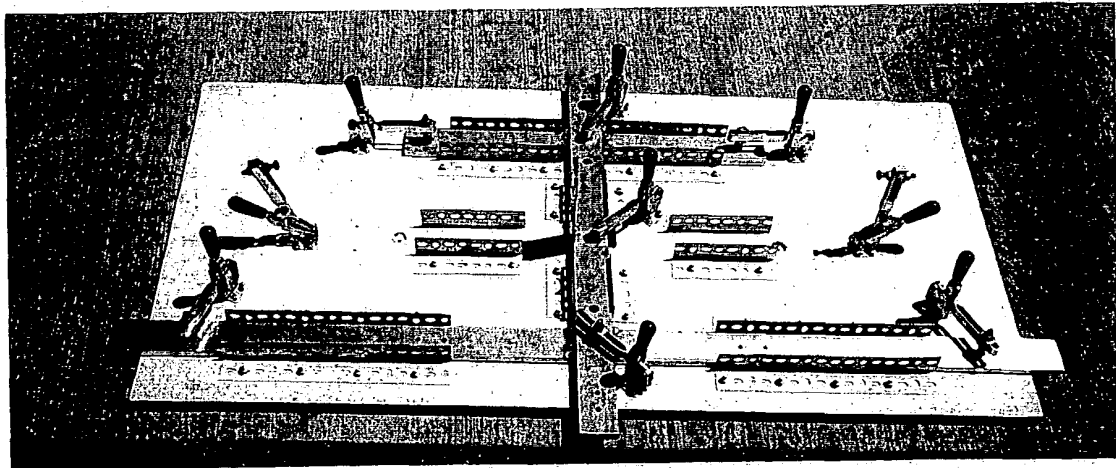
Picture # 8 REAR UNIT TO OUT SIDE RAIL

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The Jig used to manufacture the alignment units for drive axle part # 856 / part # 857 and for steering axle part # 858 / # 859. One jig for the four units. Material $\frac{3}{4}$ " x 24" x 48" steel plate, $\frac{3}{32}$ " x 1 $\frac{1}{2}$ " x 1 $\frac{1}{2}$ " steel angle, hold down clamps DE-SAT-CO model # 207-UL, $\frac{1}{4}$ " bolts with stop nuts used to hold down angles and clamps. The dimension for the location of the angles will be found on the drawing sheet # 2 and sheet # 4 where the units are shown. After placing them in the jig, weld together and drill holes for the location pins, when completed remove from jig and mill surface where locator pins attach and when laser light attach on the drive axle units, and the scale on the steering axle units.



Picture # 10 Drive Axle

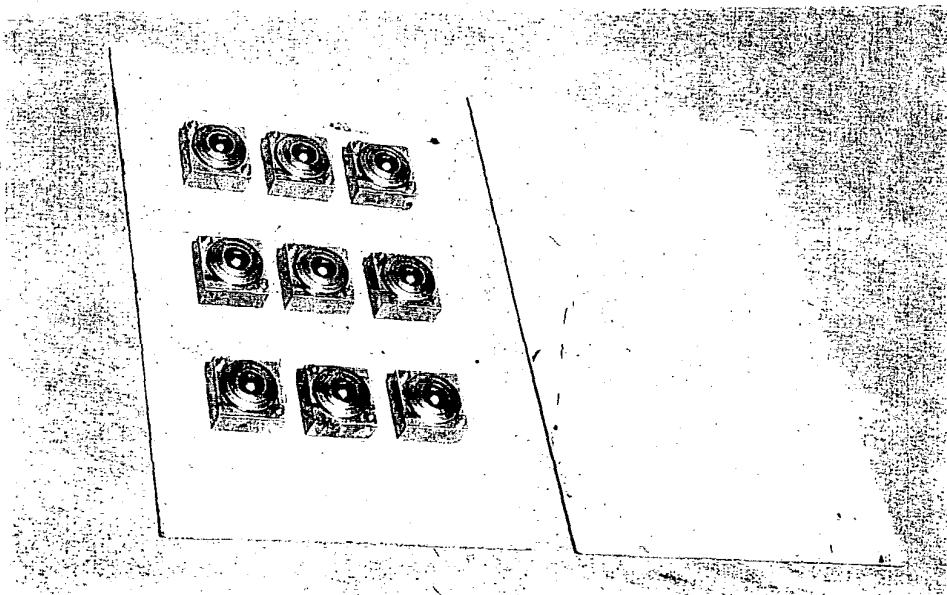


Picture # 11 Steering Axle

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The roller plates used under all wheels when making any adjustment during the alignment. The bottom plate is $\frac{1}{4}$ " x 14" x 22" steel plate with 9 blocks of 75 ST aluminum $1\frac{1}{2}$ " x $2\frac{1}{2}$ " x $2\frac{1}{2}$ " with a hole in the center $1\frac{3}{16}$ " dia. and a ball transfer unit # 30 MPC pressed into the block and it is attached to bottom plate with #10 flush head screw from the bottom with lock nuts. They are in three rows $2\frac{1}{4}$ " from each side and one in the center. They are $4\frac{1}{4}$ " from top and bottom with one row in the center. Each roller loading capacity is 770 lb., a total of 6,930 lb., for each roller assem. The top plate is $\frac{3}{8}$ " x 14" x 22" and it lays on the rollers so it will move without restriction. Picture below for # 1 roller plate part # 863.

There is another roller plate assem. the bottom plate is $\frac{1}{4}$ " x 16" x 22" with a $\frac{1}{4}$ " square rod formed and welded to plate, so it will contain 338 pc. of $\frac{1}{2}$ " steel balls, with a $\frac{1}{4}$ " ID. x $\frac{1}{2}$ " OD. x $1\frac{1}{16}$ " long spacer, welder 1" down and 1" over in each corner. The top plate is $\frac{3}{8}$ " x 16" x 22" 4130 steel plate. There is a $1\frac{1}{2}$ " hole in each corner to give the top plate space to move when adjusting, there is a $1\frac{5}{8}$ " long flush head screw from the bottom with a $2\frac{1}{2}$ " washer and lock nut holding down the washer, this will hold it together. See sheet # 10 drawing section for more information on roller plate # 2 part # 864.



Picture # 12 Roller Plate # 1 part # 863

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